UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,382	09/05/2003	Eiji Hashimoto	APW-022	8525

959 7590 03/02/2006

LAHIVE & COCKFIELD
28 STATE STREET
BOSTON, MA 02109

EXAMINER	
CHANG, SUNRAY	
ART UNIT	**PAPER NUMBER**
2121	

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,382	HASHIMOTO ET AL.	
	Examiner	Art Unit	
	Sunray Chang	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in responsive to the paper filed on December 12th, 2005.

Claims 1 – 20 are presented for examination.

Claims 1 – 20 are rejected.

Double Patenting

2. **Claims 1 – 20 are provisionally rejected** on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 16 of copending Application No. 10/349,538 in view of U.S. Patent No. 6,082,099. Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, claim 1 of current application [10/656,382] claiming a control system for a plant which is controlled based on a controlled object model obtained by modeling the plant [10/349,538 claim 1], sampling period is longer than a control period of the controller [10/349,538 claim 1], and the controller carries out a control process within the control period [10/349,538 claim 1]. U.S. Patent No. 6,082,099 teaches filtering an output of the controller to be the sampled input of the plant [The filtering with the low-pass characteristics is carried out by storing the differential output VCO2 acquired in STEP3 ... This filtering process is one type of digital filtering process, and is generally known as the moving averaging process, Col. 37, Lines 19 – 40, see also claim 6 of this patent, "identifying means for identifying parameters to be established of said discrete-system model based on the data representing the output of said first detecting means and the data representing an output of said second detecting means"]

Further examples, claims 2 – 6 conflict with claims 2 – 4, 6 and 8 of copending Application No. 10/349,538 claiming a feedback control, specifying a damping characteristic, sliding mode controller, etc.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1 – 20 are rejected** under 35 U.S.C. 102(b) as being anticipated by (U.S. Patent No. 6,082,099, and referred to as **Yasui_2000** hereinafter).

Regarding independent claims 1, 7 – 8 and 14 – 15,

Yasui_2000 teaches,

- A control system for a plant, [Col. 1, Lines 18 – 20, and 23 – 31] including
- said identifying means identifies the at least one model parameter. [Col. 19, Lines 37 – 51 and Col. 15, Line 19 – Col. 16, Line 15]
- a controller for controlling said plant based on a controlled object model which is obtained by modeling said plant, [Col. 15, Lin2 19 – Col. 16, Line 15]

- said controlled object model being modeled using an input and an output of said plant which are sampled at intervals of a sampling period which is longer than a control period of said controller, [Col. 48, Lines 13 – 25; Fig. 7 and Col. 30, Lines 32 – 57] *
- the sampled input of said plant being a filtered control output which is obtained by filtering an output of said controller, wherein
- said controller carries out a control process of said plant at intervals of the control period. [Col. 16, Lines 10 – 15]

*The examiner further explains, the air-fuel ratio manipulated variable determining unit can determined the target air-fuel ratio KCMD without using the output KACT or the differential output kact from the LAF sensor, [**Yasui_2000** Col. 48, Line 20 – 25] shows the ratio for control has been determined more frequently than sensor sensing.

Regarding dependent claims 2, 9 and 16

- said controller performs a feedback control of calculating the input of said plant to make the output of said plant coincide with a target value, [Col. 26, Lines 11 – 20]
- said controller being capable of specifying a damping characteristic of a deviation between the output of said plant and the target value. [Col. 26, Lines 11 – 29]

Regarding dependent claims 3, 10 and 17,

- said controller is a sliding mode controller. [Col. 26, Lines 4 – 8]

Regarding dependent claims 4, 11 and 18,

- a value of a switching function defined as a linear function of the deviation between the output of said plant and the target value, [Col. 19, Line 61 – Col. 20, Line 27] and
- a sampling time interval of the deviation which is used to calculate the value of the switching function is longer than the control period of said controller. [Col. 19, Lines 37 – 51 and Col. 15, Line 19 – Col. 16, Line 15]

Regarding dependent claims 5, 12 and 19,

- identifying means for identifying at least one model parameter of the controlled object model, [Col. 19, Lines 30 – 36] wherein
- said controller calculates the input of said plant using the at least one model parameter identified by said identifying means, [Col. 19, Lines 37 – 51] and
- said identifying means identifies the at least one model parameter at intervals of a second period which is longer than the control period of said controller. [Col. 19, Lines 37 – 51 and Col. 15, Line 19 – Col. 16, Line 15]

Regarding dependent claims 6, 13 and 20,

- said plant includes a throttle valve of an internal combustion engine and a throttle valve actuating device having actuating means for actuating said throttle valve, [Col. 11, Lines 13 – 24, and Col. 12, Lines 18 – 25] and
- said controller calculates a parameter for determining a control input to be applied to said throttle valve actuating device to make an opening of said throttle valve coincide with a target opening. [Col. 12, Lines 9 – 43]

Response to Amendment

Claim Rejections - 35 USC § 102

4. Applicants provide an English language translation for the certified priority document to disqualify U.S. PG Pub. 2003/0009240 reference as a prior art for 103(a) rejections. The rejections based on the reference have been withdrawn. Further prior arts have been cited for further rejections.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is (571) 272-3682. The examiner can normally be reached on M-F 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-3506.

Sunray Chang
Patent Examiner
Group Art Unit 2121
Technology Center 2100
U.S. Patent and Trademark Office

Anthony Knight
Supervisory Patent Examiner
Group 3600

February 21, 2006